

This listing of claims, dated 10/10/2006 and relating to claims as pending on the date of final rejection OA mailed 01/25/2006, will replace all prior versions, and listings, of claims in the application.

**Listing of Claims:**

Claims 6-8, 11, 14, 15 (previously canceled)

Claims 1-5, 9, 10, 12, 13, and 16-18 (currently canceled)

19. (new) An improvement in stringed musical instrument hum-bucking electromagnetic pickups having a pickup coil surrounding a pickup core region containing a permanent magnet system linking strings of the instrument, and having a hum-bucking coil surrounding a hum-bucking core region disposed in co-linear alignment with the pickup core region and containing a magnetically permeable core-piece, the hum-bucking coil being interconnected in opposing polarity with the pickup coil so as to provide cancellation of unwanted hum interference as a tradeoff for an amount of tonal degradation due to audio circuit intrusion of the hum-bucking coil, the improvement comprising:

a flux transfer structure of magnetically permeable material having a first portion surrounding at least a major portion of the pickup coil externally, and a second portion disposed internally within the hum-bucking coil in the core region thereof, contacting and surrounding at least a major portion of the core-

piece, the first and second portions being seamlessly and continuously interconnected by an intermediate offsetting portion so as to form overall a funnel shape such that a set of environmental hum and noise flux lines within a total extent of the first portion having a cross sectional area approximating that of the pickup coil are caused to become compressed and intensified into a much smaller cross-sectional area in the core region of the hum-bucking coil containing the core-piece, thus intensifying flux density in the hum-bucking core region in an unusually efficient and effective manner due to the seamless interconnection provided by the intermediate offsetting portion; and

the hum-bucking coil having substantially fewer coil winding turns and thus able to made in smaller size than the pickup coil, due to effectiveness of said flux transfer structure, consequently providing a reduction in both overall pickup size and in the amount of amount of tonal degradation due to audio circuit intrusion of the hum-bucking coil. pickup size.

20. The improvement in stringed musical instrument electromagnetic pickups as defined in claim 19 wherein the cross-sectional area of the first portion of said flux transfer structure disposed outside the pickup coil is at least five time greater than the cross-sectional area of the second portion of said transfer structure disposed inside the hum-bucking coil. in the core region thereof.

21. The improvement in stringed musical instrument electromagnetic pickups as defined in claim 19 wherein said flux transfer structure comprises:

a pair of magnetically permeable flux transfer plates disposed in mirror image relationship externally along opposite sides of the electromagnetic pickup, each plate configured with a stepped cross-sectional shape having a first planar portion joined seamlessly via an intermediate step portion to a second planar portion thus offset from the first portion, the first portions being disposed flanking said pickup coil externally and the second portions being disposed within the second core region flanking said core-piece.

22. The improvement in stringed musical instrument electromagnetic pickups as defined in claim 21 wherein:

the first planar portions of said flux transfer plates are parallel and are spaced apart by a first separation dimension; and

the second planar portions of said flux transfer plates are parallel and spaced apart by a second separation dimension that is smaller than the first separation dimension by a factor of at least five times..

23. The improvement in stringed musical instrument electromagnetic pickups as defined in claim 19 further comprising:

said hum-bucking coil being wound with additional turns greater than a nominal number of turns required for total hum-bucking cancellation effect; and

an adjustable resistor, connected in conjunction with said hum-bucking coil, made and arranged to provide adjustment for maximizing hum-bucking cancellation effect.

24. (new) An electro-magnetic pickup for sensing vibration of magnetically permeable strings of a stringed musical instrument and generating audio signals therefrom, comprising:

a pickup coil surrounding a pickup core region of designated length having an end facing the strings;

at least one permanent magnet, disposed in the pickup core region, magnetically linked to associated strings in a manner to generate an audio signal induced in the pickup coil from vibration of the strings when the instrument is played, thus providing an audio output signal for amplification;

a hum-bucking coil surrounding a hum-bucking core region located adjacent to and aligned with the pickup core region at an end thereof opposite the end facing the strings;

said hum-bucking coil being interconnected with said pickup coil in opposite polarity so as to tend to cancel effects of unwanted environmental magnetic flux lines representing hum and noise disturbances traversing the two core regions;

a flux transfer structure having a first portion externally surrounding at least a major portion of said pickup coil, a

second portion disposed within the hum-bucking core region, surrounding at least a major portion of said core-piece, and an intermediate portion interconnecting the first and second portions contiguously and seamlessly, said flux transfer structure being made and arranged to transfer a set of flux lines encompassed by the first portion into a much smaller cross-sectional area encompassed by the second portion and consequently at greatly intensified flux density, in an unusually efficient and effective manner due to the seamless interconnection provided by the intermediate portion;

a magnetically permeable core-piece disposed within the hum-bucking core region;

said hum-bucking coil having substantially fewer coil winding turns and smaller size than said pickup coil, as enabled by unusual effectiveness of said flux transfer structure;

whereby tonal quality is improved to closer approach that of single coil pickups, and smaller overall pickup size creates possibility of deployment in instrument cutouts dimensioned for single coil pickups.

25. (new) An electro-magnetic pickup as defined in claim 24 wherein said flux transfer structure comprises:

a pair of magnetically permeable flux transfer plates disposed in mirror image relationship on opposite sides of said pickup, each plate being configured with a stepped cross-sectional shape having a first planar portion joined seamlessly

via an intermediate step portion to a second planar portion thus offset from the first portion, the first portions being disposed flanking said pickup coil externally and the second portions being disposed internally within the second core region flanking said core-piece such that each of the flux transfer structure extends continuously and seamlessly over a full extent of said pickup coil and said hum-bucking coil.

26. The improvement in stringed musical instrument electromagnetic pickups as defined in claim 24 further comprising:

said hum-bucking coil being wound with additional turns greater than a nominal number of turns required for maximum hum-bucking cancellation effect; and

an adjustable resistor, connected in conjunction with said hum-bucking coil, made and arranged to provide adjustability for maximizing hum-bucking cancellation effect.

27. A method of processing undesired electromagnetic flux lines for improved tonal quality and more compact overall size in stringed musical instrument hum-bucking electromagnetic pickups having a pickup coil with a pickup core region containing a permanent magnet system linking strings of the instrument, and having a hum-bucking coil adjacent the pickup coil and connected in opposition thereto, the hum-bucking coil having a hum-bucking core region aligned with the pickup core region, the method

comprising the steps of:

incorporating a magnetically permeable core-piece disposed within the hum-bucking core region; and

incorporating a flux transfer structure having a first portion externally surrounding at least a major portion of the pickup coil, a second portion disposed within the hum-bucking core region, surrounding at least a major portion of the core-piece, and an intermediate portion interconnecting the first and second portions contiguously and seamlessly, the flux transfer structure being made and arranged to provide a flux-funneling effect tending to transfer a set of flux lines encompassed by the first portion into a much smaller cross-sectional area within the hum-bucking core region encompassed by the second portion and accordingly at greatly intensified flux density, in an unusually efficient and effective manner due to the seamless interconnection provided by the intermediate portion;

making the hum-bucking coil with substantially fewer turns than the pickup coil as enabled by the seamless flux transfer structure, thus improving tonal response of the pickup; and

making the hum-bucking coil substantially smaller in size than the pickup coil regarding core length and thus reducing overall size of the pickup, as enabled by the fewer turns in the hum-bucking coil.

28. (new) The electro-magnetic pickup as defined in claim 27 wherein the flux transfer structure comprises:

a pair of magnetically permeable flux transfer plates disposed in mirror image relationship on opposite sides of said pickup, each plate being configured with a stepped cross-sectional shape having a first planar portion joined seamlessly via an intermediate step portion to a second planar portion thus offset from the first portion, the first portions being disposed flanking said pickup coil externally and the second portions being disposed internally within the second core region flanking the core-piece such that each of the flux transfer structure extends continuously and seamlessly over a full extent of the pickup coil and the hum-bucking coil.

29. The improvement in stringed musical instrument electromagnetic pickups as defined in claim 27 comprising the further steps of:

winding the hum-bucking coil with additional turns greater than a nominal number of turns required for maximum hum-bucking cancellation effect; and

connecting an adjustable resistor in conjunction with the hum-bucking coil so as to provide adjustability for maximizing hum-bucking cancellation effect.